

In the application of: Mehrotra et al.  
Serial No. 10/606,482  
Filed: June 26, 2003

RESPONSE TO NON-FINAL OFFICE ACTION OF JUNE 16, 2006

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**REMARKS**

**Introduction**

By this paper, applicants fully respond to the pending non-final Office Action mailed June 16, 2006. Applicants solicit the allowance of the claims.

**Rejection of Claims 25-26, 28 and 30 under 35 USC §102(b)/35 USC §103(a)**

By the Office Action, the Examiner has rejected claims 25-26, 28 and 30 under 35 USC §102(b)/35 USC §103(a) over Moriguchi et al. (U.S. Patent No. 5,296,008). Applicants disagree with the rejection for the reasons expressed below, and request the removal of the rejection and the allowance of the claims.

One concern of Moriguchi et al. is to address the task of forming a ceramic cutting tool insert with a directly sintered surface capable of functioning as a cutting edge without having to grind the insert to achieve its final shape. According to Moriguchi et al., grinding causes crack-inducing flaws and increases the manufacturing costs. See Col. 2, lines 19-32. In an attempt to address this issue, Moriguchi et al. discloses treating the surface of the sintered ceramic body without grinding. However, as best applicants can ascertain, after such surface treatment (blasting, barreling and ultrasonic vibration) the insert is useful for cutting with or without a coating, but there is no heat treatment after the surface treatment.

Further, Moriguchi et al. teaches away from grinding the surface of the ceramic. In this regard, at Col. 3, lines 47-52, Moriguchi et al. states that an object of the invention is to improve, "... the surface state of the silicon nitride sintered body **without grinding**." Emphasis added.

Keeping the above distinctions in mind with respect to claim 25, applicants submit that Moriguchi et al. does not teach or suggest the step of, "... heat treating the **ground** ceramic cutting insert ...so as to form the heat treated **ground** ceramic cutting

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insert.” (Emphasis added). Further, Moriguchi et al. does not address any feature of the claims that call for grinding or the article being “ground”. Applicants submit that Moriguchi et al. cannot be applied against claim 25 under either §102(b) or §103(a).

Claim 26 depends from claim 25 and is patentable for all of the reasons advanced in support of claim 25.

Claim 28 depends from claim 25 and is patentable for all of the reasons advanced in support of claim 25. Further, claim 28 specifically requires the step of, “...grinding at least a portion of the uncoated unground ceramic cutting insert blank so as to form the uncoated ground ceramic cutting insert.” Applicants respectfully submit that Moriguchi et al. cannot be used to teach grinding when it specifically teaches away from grinding a silicon nitride ceramic.

Claim 30 depends from claim 25 and is patentable for all of the reasons advanced in support of claim 25.

For the above reasons, applicants submit that the rejections lack merit and solicit the removal thereof along with the allowance of the claims.

**Rejection of Claims 28 and 31-34 under 35 USC §103(a)**

By the Office Action, the Examiner has rejected claims 28 and 31-34 under 35 USC §102(b)/35 USC §103(a) over Moriguchi et al. in view of either Jindal (U.S. Patent No. 5,858,181) or Beeghly (U.S. Patent No. 5,628,590). Applicants disagree with the rejection for the reasons expressed below, and request the removal of the rejection and the allowance of the claims.

Applicant argued against the application of Moriguchi et al. against claim 28, and reiterates those arguments herein. Further, all of the claims under rejection depend from claim 25 in one fashion or another, and should be allowable for the reasons advanced in support of claim 25.

In reference to claim 34, the Examiner writes at page 5 of the Office Action:

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... although Moriguchi is silent to the powder material containing titanium carbonitrides, it teaches that when a titanium carbonitrides coating is applied that it is to be expected that the TiC will be found in the base material due to nitrogen diffusion (col. 4, ln. 41-52). In the alternative, it would have been obvious to have included compounds such as TiCN since it is recognized that the diffusion of this compound can assist in forming a coating which exhibits excellent adhesion strength to the base material.

It is an improper leap to say that a titanium carbonitride coating addresses a powder mixture that contains titanium carbonitride. The above combination of documents does not render claim 34 obvious.

For the above reasons, applicants submit that the rejections lack merit and solicit the removal thereof along with the allowance of the claims.

**Rejection of Claims 25-29 and 31-34 under 35 USC §103(a)**

By the Office Action, the Examiner has rejected claims 25-29 and 31-34 under 35 USC §103(a) over Jindal. Applicants disagree with the rejection for the reasons expressed below, and request the removal of the rejection and the allowance of the claims.

As set forth above, claim 25 requires a heat treatment after grinding and Jindal does not teach or suggest this recitation. In regard to the application of Jindal, applicants point out that the 400 °C heating step of Jindal does not equate to the heat treatment of the present invention. A step at 400 °C to evaporate the cleaning mixture is not the same as the step to heat treat a ground substrate at 1300-2200 °C.<sup>1</sup>

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<sup>1</sup> One focus of Jindal is to clean the surface of the substrate prior to coating to obtain better coating adhesion. Col. 2, lines 31-40.

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In regard to claims 26-29 and 31-34, each one of these claims depends in one fashion or another from claim 25, and hence, is allowable for the reasons advanced in support of the allowance of claim 25.

In addition, the Examiner admits that Jindal does not disclose all of the materials claimed in claim 29; yet, the Examiner concludes that claim 29 is obvious. In this regard, the Examiner wrote at page 6 that:

Jindal is silent to the addition of the other compounds which are claimed.

However, absent a teaching of the criticality of the claimed additives claimed and in the specific amounts recited, it would not provide a patentable distinction over the prior art. The use of ceramics compounds including magnesium, silicon dioxide and calcium oxide are known in forming cutting inserts. It would have been within the purview of one of ordinary skill in the art to have recognized that any compounds known to be suitable for use in cutting inserts could be employed in the insert of Jindal with a reasonable expectation of success.

The Examiner's reasoning expands Jindal past the breaking point. Jindal cannot legitimately address a claim that recites a compound when Jindal does not teach or suggest that compound. Such reasoning runs counter to basic patent law principles of obviousness.

Claim 34 calls for the powder mixture to include titanium carbonitride. The Examiner correctly points out that no specific embodiment in Jindal includes titanium carbonitride. The statement in Jindal at Col. 4, lines 1-4 is merely a shopping list of refractory metal compounds, and hence, does not provide sufficient teaching to use titanium carbonitride in the composition.

For the above reasons, applicants submit that the rejections lack merit and solicit the removal thereof along with the allowance of the claims.

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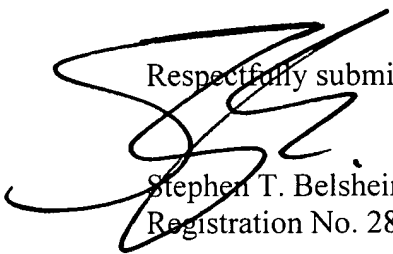
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**Conclusion**

For the above reasons, applicants solicit the removal of the rejections and request allowance of the claims. If the Examiner disagrees with the above arguments, but has suggestions to place the claims in form for allowance, applicants urge the Examiner to contact the undersigned attorney (615-662-0100) or Mr. John J. Prizzi, Esq. (724-539-5331) to discuss the claims.

Respectfully submitted,

  
Stephen T. Belsheim  
Registration No. 28,688

179 Belle Forrest Circle  
Suite 102  
Nashville, Tennessee 37221  
Telephone: 615 662 0100  
Facsimile 615 662 0352

**Customer No. 1400**

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